

Remarks/Arguments:

Claims 1, 7-9, 13, 25, and 26 are currently pending in this application. By this Amendment, claims 1 is amended, claims 10-12 and claims 14-24 are cancelled and new claims 25 and 26 are added. Support for the amendments to the claims and the new claims may be found, for example, in the original claims, paragraphs [0068] to [0073], and throughout the specification. No new matter is added.

In view of the foregoing amendments, following remarks, and attached Declaration under 37 C.F.R. §1.132 of Keita Ishiduka, reconsideration and allowance are respectfully requested.

Rejections Under 35 U.S.C. §103

Miyazawa in view of Hatakeyama and Endo

The Office Action rejects claims 1, 7-12, 14, and 18-22 under 35 U.S.C. §103(a) over Japanese Publication No. JP 2003-040840 to Miyazawa et al. (“Miyazawa”) in view U.S. Patent No. 7,001,707 to Hatakeyama et al. (“Hatakeyama”) and rejects claims 1, 13, 14, 23, and 24 under 35 U.S.C. §103(a) over Miyazawa in view of U.S. Publication No. 2004/0259040 to Endo et al. (“Endo”). By this Amendment, claims 10-12 and 14-24 are cancelled, rendering their rejection moot. Applicants respectfully traverse this rejection as to the remaining claims.

In order to provide a *prima facie* case of obviousness, a reference or combination of references must disclose every element of the claims, *In re Glatt Air*, 630 F.3d 1026, 1030 (Fed. Cir. 2011), along with a rationale for combining references or modifying a reference and predictable results or an expectation of success.

The Examiner acknowledges that “Miyazawa does not specifically teach the monomer units in amounts of 20-80mol%.” Nevertheless, the Examiner asserts that “it would have been obvious to one of ordinary skill in the art to optimize the methacrylic and acrylic acid ester monomer units in amounts of 20-80mol%.” *See* Office Action, page 3, second paragraph. The

Examiner also acknowledges that "the combination of recurring units (a1), (a2), and (a3) is not exemplified in the reference. However, it would have been obvious to one of ordinary skill in the art to combine the recurring units because Miyazawa teaches any combination of the formulas (1)-(7) and additional monomer units are suitable to form the acid dissociable, dissolution inhibiting resin for the resist composition." *See* Office Action, page 4, first paragraph. Applicants respectfully disagree with the Examiner's assertions.

Without conceding the propriety of the rejections, independent claim 1 is amended to more clearly recite various novel features of the claimed invention. Specifically, claim 1 is amended to recite that: "at least one constitutional unit (a4) induced from a (meth)acrylic ester having a monocyclic or a polycyclic group containing lactone, the constitutional unit (a1) consisting of a cyclic group bonded to an acrylic ester of the constitutional unit (a1), and a fluoro organic group bonded to the cyclic group, and the fluoro organic group being formed by at least partially substituting hydrogen atoms of an organic group with fluorine atoms, and having one unsubstituted alcoholic hydroxyl group." Miyazawa does not teach or suggest such features. Hatakeyama and Endo, whether considered independently or combined fail to cure the deficiencies of Miyazawa, as they also fails to teach or suggest such features.

Applicants submit a Declaration under 37 C.F.R. §1.132 of Keita Ishiduka in support of the patentability of the claimed invention, in particular, in order to demonstrate the non-obviousness of the claimed invention over Miyazawa, Hatakeyama and Endo.

In particular, the Declaration is provided in order to present data that demonstrates that the claimed composition results in unexpected results. In particular, the resin component included in the positive-type resist composition for liquid immersion lithography according to the present invention contains at least three types of constitutional units, i.e., a constitutional unit (a1), a constitutional unit (a2), and a constitutional unit (a4). In this regard, the constitutional unit (a1) is induced from ester acrylate, and has a cyclic group to which a fluoro organic group is

bound. Furthermore, the fluoro organic group has one unsubstituted alcoholic hydroxyl group. The constitutional unit (a2) is induced from a methacrylic ester having an acid dissociable, dissolution inhibiting group. The constitutional unit (a4) is induced from (meth)acrylic ester having a monocyclic or a polycyclic group containing lactone.

As can be seen from appended Experimental Results, Example 1 in which a resin (1) containing the three types of constitutional units described above was used exhibited superior water repellency and patterning characteristics, and decreased influence of film loss until completing PEB.

On the other hand, Comparative Example 1 in which a resin (2) not containing the constitutional unit (a1) was used exhibited inferior water repellency, and thus is not suited for liquid immersion lithography process due to failure in slippage of water droplets. In addition, increased influence of film loss until completing PEB was exhibited.

Similarly, Comparative Example 2 in which a resin (3) that is similar to the resin (1) but has two unsubstituted alcoholic hydroxyl groups was used exhibited inferior water repellency, and thus is not suited for liquid immersion lithography process due to failure in slippage of water droplets. Additionally, Comparative Example 3 in which a resin (4) not containing the constitutional unit (a4) was used failed to form a 100 μm line pattern due to inferior patterning characteristics. Moreover, Comparative Example 4 in which a resin (5) that is similar to the resin (1) but does not have a cyclic group was used exhibited increased influence of film loss until completing PEB.

In these respects, Miyazawa, Hatakeyama, and Endo do not in any way disclose the aforementioned constitutional unit (a4). Therefore, a combination of at least three types of constitutional units, the constitutional unit (a1), the constitutional unit (a2), and the constitutional unit (a4) is also not in any way disclosed. Thus, the effects described above achievable by using

the three types of constitutional units in combination could not have been conceived in view of Miyazawa, Hatakeyama, and Endo, whether they are considered alone or in combination.

Accordingly, independent claim 1 would not have been rendered obvious by Miyazawa, Hatakeyama, and Endo. Claims 7-9, 13, and 25-26 variously depend from claim 1 and, thus, also would not have been rendered obvious by Miyazawa, Hatakeyama, and Endo. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication, or credit any overpayment, to Deposit Account No. 08-2461. Such authorization includes authorization to charge fees for extensions of time, if any, under 37 C.F.R. § 1.17 and also should be treated as a constructive petition for an extension of time in this reply or any future reply pursuant to 37 C.F.R. § 1.136.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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Application No. 10/591,718
Amendment and Response dated April 27, 2012
Reply to Office Action mailed on October 28, 2011
Docket No.: 1608-7 PCT/US/RCE III
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